

PATENT APPLICATION OF

Hui Peng and Gang Grant Peng

For

Group III-V Compound Semiconductor High Brightness White or Desire Color LEDs

ABSTRACT

Group III-V compound semiconductor high brightness white or desire color light emitting diodes (LEDs) are disclosed. One of embodiments of the LEDs of the present invention comprises a first active layer, a second active layer, and a transition active layer sandwiched between the first and the second active layers, and is flip chip bonded on an electrically conductive submount for faster heat dissipation. Material systems for active layers of the LEDs of the present invention comprise $(\text{Al}_{\text{sub.}x}\text{Ga}_{\text{sub.}1-x})_{\text{sub.}y}\text{In}_{\text{sub.}1-y}\text{P}_{\text{sub.}z}\text{N}_{\text{sub.}1-z}$. With combinations of different values of “x”, “y”, and “z”, the active layers and the transition active layer emit lights of different wavelengths. Appropriately adjusting wavelengths and intensities of emitted lights provides high brightness white or desire color.